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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,400	11/19/2003	Dureseti Chidambarao	FIS92003024US1	5307

7590 10/11/2006  
Andrew M. Calderon  
Greenblum and Bernstein P.L.C.  
1950 Roland Clarke Place  
Reston, VA 20191

EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 10/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/715,400

Applicant(s)

CHIDAMBARRAO ET AL.

Examiner

James M. Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 18-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,7,9-12,14 and 15 is/are rejected.
- 7) ☒ Claim(s) 2,5,8,13,16 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 5/8/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This office action is in response to applicant's May 8, 2006.

#### ***Election/Restrictions***

2. Pursuant to applicant's request, examiner acknowledged applicant's election without traverse of species of annealing a first and second material in the reply filed on August 24, 2004 is acknowledged.
3. Claims 18-26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on August 24, 2006.
4. In regards to claims 27-31, contrary to applicant allegation that claim 27 is generic to Species I, it is not because it recites additional limitations, such as "straining the Si..." not found in independent claim 1. Furthermore, claim 27-31 is withdrawn as being drawn to nonselected Species, because it does not require the annealing of a first and second material.

#### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 1, 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawagoe et al. (U.S 2002/0061615).

7. Kawagoe (Fig. 20-24) discloses:

(cl. 1) a method of manufacturing a structure, comprising the steps of: forming shallow trench isolation, STI, (3) in a substrate (2W); providing a first material (e.g. 2E containing Boron; Par. 0173) on the substrate; providing a second material (e.g. 2E containing Phosphorus; Par. 0172) on the substrate; mixing the first material and the second material into the substrate by a thermal anneal process (Par. 0174) to form a first island (6n) and second island (6p) at a nFET region and a pFET region, respectively (Fig 22); and forming a layer of material (4Pd) on the first island and the second island having a lattice constant different than the first island and the second island, wherein the STI (e.g. silicon dioxide, Col. Par. 084) relaxes and facilitates the relaxation<sup>1</sup> of the first island and the second island;

(cl. 3) the thermal anneal process takes place at about 1200 to 1350 C (Par. 0174)

(cl. 6) wherein the STI is formed of a material which has a lower viscosity as the temperature rises (*see footnote 1*);

(cl. 9) wherein the first island and the second island have a different relaxed crystal lattice (e.g. different compositions);

(cl. 10) wherein the STI is a high temperature stable amorphous material (*see footnote 1*);

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<sup>1</sup> Silicon Dioxide is same material as disclosed by applicant and there has same characteristics. See applicant's specification Page 7, Second Paragraph.

(cl. 11) the first material and the second material are deposited on the substrate prior to the mixing step (e.g. formed in 2E before anneal; Par.0172-0174);

(cl. 12) the first material and the second material are grown on the substrate prior to the mixing step (e.g. "epitaxial layer 2E"; Par. 0172).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawagoe et al. (U.S 2002/0061615) in combination with Chen et al. (U.S. 2004/0005750).

10. Kawagoe discloses the elements stated in paragraph 8 of this office action and further Silicon material on (4Pd, 4Nc2) on first and second islands, but fails to disclose the method of forming its silicon.

11. Chen (Par. 0004) teaches forming a layer of material by epitaxial growing a layer of Si material.

12. It would have been obvious to one of ordinary skill in the art to incorporate a process of growing silicon on the substrate of Kawagoe in order to form gates as taught by (Chen (14) and as required by Kawagoe (e.g. 4Pd).

13. Claims 7 and 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawagoe et al. (U.S 2002/0061615) in combination with Hoffman et al. (U.S.2004/0253776).

14. Kawagoe discloses the elements stated in paragraph 8 of this office action, but fails to explicitly disclose the Si material is placed in a tensile stress on the first island and placed in a compressive stress on the second island.

15. However Hoffman teaches its Si material (130 by item 213, 214) placed in a tensile stress on the first island and placed in a compressive stress on the second island (Par. 0050).

16. It would have been obvious to one of ordinary skill in the art to incorporate the tensile and compressive straining process of Hoffmann in order to improve device performance as taught by Hoffman (Title).

17. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawagoe et al. (U.S 2002/0061615) in combination with Chen et al. (U.S. 2004/0005750) and Hoffman et al. (U.S.2004/0253776).

18. Kawagoe does not appear to disclose epitaxial growing Si or the Si material is placed in a tensile stress on the first island and placed in a compressive stress on the second island.

19. Chen (Par. 0004) teaches forming a layer of material by epitaxial growing a layer of Si material.

20. It would have been obvious to one of ordinary skill in the art to incorporate a process of growing silicon on the substrate of Kawagoe in order to form gates as taught by (Chen (14) and as required by Kawagoe (e.g. 4Pd).

21. Neither Kawagoe nor Chen appear to disclose the Si material is placed in a tensile stress on the first island and placed in a compressive stress on the second island.

22. However Hoffman teaches its Si material (130 by item 213, 214) placed in a tensile stress on the first island and placed in a compressive stress on the second island (Par. 0050).

23. It would have been obvious to one of ordinary skill in the art to incorporate the tensile and compressive straining process of Hoffmann on the modified substrate including Kawagoe in order to improve device performance as taught by Hoffman (Title).

### ***Response to Arguments***

24. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

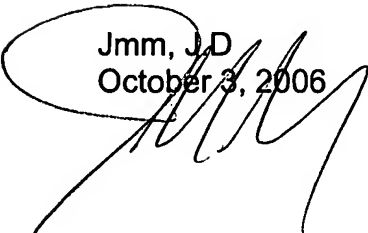
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jmm, J.D.  
October 3, 2006



CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800